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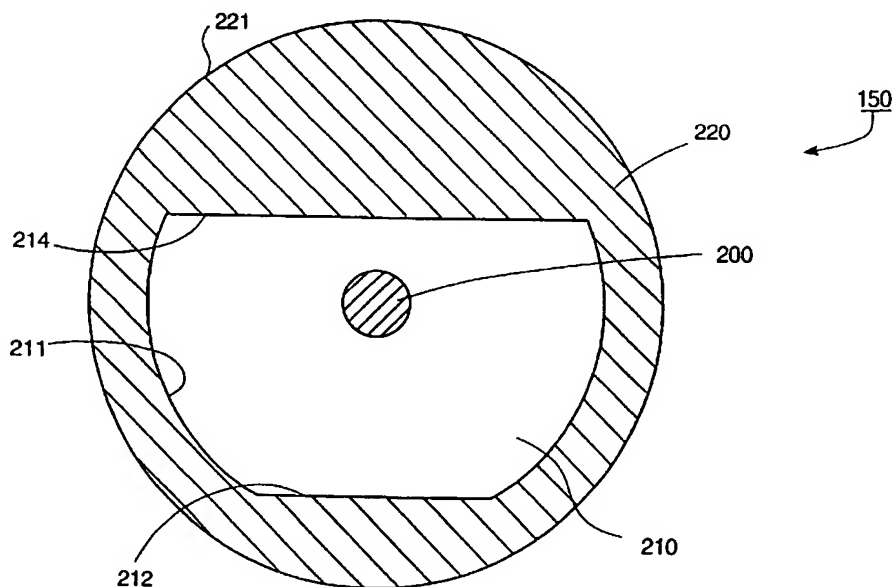
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(54) Title: **FIBER FOR ENHANCED ENERGY ABSORPTION**



(57) Abstract: Fibers including fiber lasers and fiber amplifiers and systems containing such fibers are disclosed. The fibers included can comprise a core (610), a first cladding (210) around the core (610) with the first cladding (210) having an outer perimeter with at least two substantially flat sides and a second cladding around the first cladding (210) with the second (cladding) having a non-oval shaped perimeter.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US02/06190

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :H01S 3/00

US CL :359/341.1; 385/123,126,127; 372/6

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 359/341.1; 385/123,126,127; 372/6

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

SEARCHED "EAST", search terms used: (optic\$ near fiber\$ near amplifier\$) and (first\$ near clads) and (second\$ near clads) and (ring\$ near core\$)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,877,890 A (SNITZER) 02 MARCH 1999 (02.03.1999) NOTE FIGS.1-8, COL.3, LINES 46-68, COL.4, LINES 1-68 AND COL.5, LINES 1-40.	1-3, 5, 7-9, 12-18, 21-22, 25, 29-31, 44, 45, 47, 50-52, 54, 56-58, 60, 62-65, 67, 68, 147-154, 194-195, 197-202, 204, 206-212, 214, 220-226, 228-236, 244, 246-252, 254, 256-262, 264, 270-282, 284, 285, 287, 289-303.

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier document published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"G" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

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INTERNATIONAL SEARCH REPORT

International application No.
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,121,460 A (TUMMINELLI ET. AL.) 09 JUNE 1992 (09.06.1992) NOTE FIGS.1-10, COL.3, LINES 26-68, COL.5, LINES 1-60.	1-4,7-20,21-2 4,26- 45,50-53,55- 65,68,147 -149, 151- 153,194,195,198- 200,, 202,,204,206,208,2 10-212,, 214,216- 224,226,228,230,23 2,233,234,236,238, 240- 243,244, 246- 250,252,254,256,25 80260,,262,266, 267-272,274- 276,278-280,282- 285,287, and 289- 303.
A	US 5,077,087 A (BYER ET. AL.) 31 DECEMBER 1991, (31.12.1991) NOTE ENTIRE REFERENCE.	1-303
A	US 4,815,079 A (SNITZER ET. AL.) 21 MARCH 1989 (03.21.899) NOTE ENTIRE DOCUMENT.	1-303

INTERNATIONAL SEARCH REPORT

International application No.

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BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING

This ISA found multiple inventions as follows:

This application contains claims directed to more than one species of the generic invention. These species are deemed to lack Unity of Invention because they are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for more than one species to be searched, the appropriate additional search fees must be paid. The species are as follows:

A fiber having a core, a first cladding, and a second cladding and a fiber having an inner core, an outer core and a cladding.

The claims are deemed to correspond to the species listed above in the following manner:

Claim(s) 1-193, drawn to a fiber comprising a feature A - a core, a first and a second cladding; and
Claim(s) 194-303, drawn to a fiber comprising a feature B - an inner core, an outer core and a cladding.

The following claim(s) are generic: No claim is generic.

1. The International Searching Authority considers that the international application does not comply with the requirements of unity of invention (Rules 13.1, 13.2 and 13.3) for the reasons indicated below:

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2 the species lack the same or corresponding special technical features for the following reasons: Feature A is a special technical feature and Feature B is another unrelated special technical feature. Therefore unity does not exist.